CLAIMS

1. A power source apparatus comprising: a conversion circuit (40, 60, 34, 32, 91, 100, 80) which performs conversion of an input voltage into an output voltage different from the input voltage; and a driving power source (33) which is charged with the input voltage to drive said conversion circuit (40, 60, 34, 32, 91, 100, 80), wherein:

in a case where a standby signal is not supplied from outside, said conversion circuit (40, 60, 34, 32, 91, 100, 80) performs the conversion so that the output voltage may be stabilized at a predetermined first value;

in a case where the standby signal is supplied from outside, said conversion circuit (40, 60, 34, 32, 91, 100, 80) performs the conversion so that the output voltage may be stabilized at equal to or lower than a predetermined second value which is lower than the predetermined first value, by controlling the output voltage to rise when a voltage of said driving power source (33) rises to a first charging voltage, and by controlling the output voltage to lower when the voltage of said driving power source (33) lowers to a second charging voltage; and

a difference between the first and second charging voltages in the case where the standby signal is supplied is smaller than a difference between the first and second charging voltages in a case where the standby signal is not supplied.

2. The power source apparatus according to claim 1,

wherein: said conversion circuit (40, 60, 34, 32, 91, 100, 80) includes

a transformer (32a, 32b) which has a primary winding and a secondary winding which are inductively coupled to each other,

a switching circuit (40, 60, 34, 80) which applies the input voltage to said primary winding intermittently,

a rectifier circuit (91) which rectifies a voltage which is induced in said secondary winding, and

a detection circuit (100) which detects that the standby signal is supplied;

said switching circuit (40, 60, 34, 80) determines whether or not said detection circuit (100) detects the standby signal;

in a case where determining that the standby signal is not detected, said switching circuit (40, 60, 34, 80) sets timings of intermittence of the input voltage so that the output voltage may be stabilized at the predetermined first value; and

in a case where determining that the standby signal is detected, said switching circuit (40, 60, 34, 80) stabilizes the output voltage at equal to or lower than the predetermined second value, by starting applying the input voltage intermittently when the voltage of said driving power source (33) rises to the first charging voltage, and by stopping applying the input voltage when the voltage of said driving power source (33) lowers to the second charging voltage.

3. The power source apparatus according to claim 2,

wherein: said conversion circuit (40, 60, 34, 32, 91, 100, 80) further includes a feedback circuit (104, 105) which generates a feedback signal representing the output voltage; and

said switching circuit (40, 60, 34, 80) sets timings of intermittence of the input voltage so that the output voltage may be stabilized at the predetermined first value, based on the feedback signal, in a case where it determines that said detection circuit (100) does not detect the standby signal.

4. The power source apparatus according to claim 3,

wherein: said detection circuit (100) controls said feedback circuit (104, 105) so that a value represented by the feedback signal may be a predetermined value, in response to that the standby signal is supplied; and

said switching circuit (40, 60, 34, 80) determines whether or not said detection circuit (100) detects the standby signal, based on the value represented by the feedback signal.

5. The power source apparatus according to claim 4,

wherein: in a case where said detection circuit (100) detects that the standby signal is supplied, said switching circuit (40, 60, 34, 80) sets timings of intermittence of the input voltage based on the value represented by the feedback signal so that the output voltage may be stabilized at equal to or lower than the predetermined second value, by starting intermittent application of the input voltage when the voltage of said driving power source (33) rises to the first charging voltage, and by stopping the application of the input voltage when the voltage of said driving power source (33) lowers to the second charging voltage.

6. The power source apparatus according to claim 2, further comprising:

a tertiary winding (32c) which is inductively coupled to said primary winding; and

an auxiliary rectifier circuit (35) which rectifies a voltage induced in said tertiary winding (32c),

wherein said driving power source (33) is also charged with a voltage obtained by rectification by said auxiliary rectifier circuit (35).

7. The power source apparatus according to claim 1,

wherein: said conversion circuit (40, 60, 34, 32, 91, 100, 80) includes

a coil (111),

a switching circuit (40, 60, 34, 80) which applies the input voltage to said coil (111) intermittently,

a rectifier circuit (91) which rectifies a voltage induced in said coil (111), and

a detection circuit (100) which detects that the standby signal is supplied;

said switching circuit (40, 60, 34, 80) determines whether or not said detection circuit (100) detects the standby signal;

in a case where determining that the standby signal is not detected, said switching circuit (40, 60, 34, 80) sets timings of intermittence of the input voltage so that the output voltage may be stabilized at the predetermined first value; and

in a case where determining that the standby signal is detected, said switching circuit (40, 60, 34, 80) stabilizes the output voltage at equal to or lower than the predetermined second value, by starting applying the input voltage intermittently when the voltage of said driving power source (33) rises to the first charging voltage, and by stopping applying the input voltage when the voltage of said driving power source (33) lowers to the second charging voltage.

8. The power source apparatus according to claim 7,

wherein: said conversion circuit (40, 60, 34, 32, 91, 100, 80) further includes a feedback circuit (104, 105) which generates a feedback signal representing the output voltage; and

said switching circuit (40, 60, 34, 80) sets timings of intermittence of the input voltage so that the output voltage may be stabilized at the predetermined first value, based on the feedback signal, in a case where it determines that said detection circuit (100) does not detect the standby signal.

9. The power source apparatus according to claim 8,

wherein: said detection circuit (100) controls said feedback circuit (104, 105) so that a value represented by the feedback signal may be a predetermined value, in response to that the standby signal is supplied; and

said switching circuit (40, 60, 34, 80) determines whether or not said detection circuit (100) detects the standby signal, based on the value represented by the feedback signal.

10. The power source apparatus according to claim 9,

wherein: in a case where said detection circuit (100) detects that the standby signal is supplied, said switching circuit (40, 60, 34, 80) sets timings of intermittence of the input voltage based on the value represented by the feedback signal so that the output voltage may

be stabilized at equal to or lower than the predetermined second value, by starting intermittent application of the input voltage when the voltage of said driving power source (33) rises to the first charging voltage, and by stopping the application of the input voltage when the voltage of said driving power source (33) lowers to the second charging voltage.

11. The power source apparatus according to claim 7, further comprising:

an auxiliary coil (112) which is inductively coupled to said coil (111); and

an auxiliary rectifier circuit (113) which rectifies a voltage induced in said auxiliary coil (112),

wherein said driving power source (33) is also charged with a voltage obtained by rectification by said auxiliary rectifier circuit (113).

12. The power source apparatus according to claim 1,

wherein the second charging voltage in the case where the standby signal is supplied and the second charging voltage in the case where the standby signal is not supplied are substantially equal to each other.